

NGUYEN Quang-Duy

0000-0002-3517-0945

(+33) 7 53 97 25 47

quang-duy.nguyen@cea.fr

<https://w3id.org/people/quang-duy.nguyen/>

"I may stutter in speaking, but not in philosophizing, inventing, and empathizing."



Education

- 2017 – 2020 **PhD in Computer Science**
École Doctorale des Sciences Pour l'Ingénieur, University Clermont-Auvergne, France
UR TSCF, MathNUM département, INRAE (Irstea), Clermont-Ferrand, France
PhD defense : 16/07/2020
- 2014 – 2015 **Master 2 in Computer Networking**
University Claude Bernard Lyon I, France
Note : 15.31/20.00 - Rank : 1/60
- 2013 – 2014 **Master 1 in Computer Science**
Vietnam National University (VNU), Hanoi
Institut de la Francophonie pour l'Informatique (IFI), Hanoi, Vietnam
Note : 14.20/20.00
- 2007 – 2012 **Engineer of Information Technology in Computer Engineering**
Hanoi University of Science and Technology, Vietnam
Note : 14.96/20.00

Experience

- 12/2023 – present **Researcher**
- 12/2021 – 11/2023 **Postdoctoral Researcher**
LSEA laboratory, DILS department, CEA List, Palaiseau, France
Project : (1) LocalSEA; (2) CoGeFlux; (3) OTPaaS; (4) List Tech Days : F&3D DTs; (5) APS : INTEROP; (6) RAASCEMAN; (7) TARGET-X : Ros6GBUSBridge
Keywords : Industry 4.0 & 5.0, AAS, Papyrus, Manufacturing, UR3e, AGV, ROS, Robotics
- 10/2020 – 09/2021 **Postdoctoral Researcher**
LTCl laboratory, INFRES department, Télécom Paris, Palaiseau
Project : OPC UA PubSub for Caméléon
Keywords : IIoT, SNCF, OPC UA, Embedded System, Zephyr OS, Node-RED, C
- 01/2017 – 07/2020 **PhD Student**
UR TSCF, MathNUM département, INRAE
Project : (1) ConnecSens; (2) AgroTechnoPôle
Keywords : Agriculture, IoT, Ontology, Reasoning, OWL, SWRL, Java, Python
- 08/2016 – 10/2016 **Research Engineer**
Programmation, Networks and Systems team, LaBRI laboratory, Bordeaux, France
Project : Le Palais de la Mémoire
Keywords : Sounds, Method of Loci, Distributed Algorithms, Beacons, BLE, Android
- 11/2015 – 07/2016 **Research Engineer**
- 04/2015 – 08/2015 **Master 2 Intern**
Networks team, ICube laboratory, Strasbourg, France
Project : FIT/IoT-lab
Keywords : Multihoming, Mobility, Contiki, TelosB, Python, C/C++

Publications*

[C.10] **Quang-Duy Nguyen**, Yining Huang, Guéréguin Der Sylvestre Sidebe, and Saadia Dhouib, *"From Multiple Digital Twins to a Multi-Faceted Digital Twin : Towards an AAS-Based Approach"*, Proceedings of the 29th International Conference on Emerging Technologies and Factory Automation (ETFA), Padova, Italy, 09/2024

[W.3] **Quang-Duy Nguyen**, Saadia Dhouib, Eric Lucet, Antoine Le Mortellec, and Fabien Baligand, *"Bridging the Gap between IT and OT with AAS Digital Twins and MDE Techniques : An Industrial Waste Management Case Study"*, Proceedings of the 3rd Workshop on Implementing Asset Administration Shells (ImplAAS) of the 29th International Conference on Emerging Technologies and Factory Automation (ETFA), Padova, Italy, 09/2024

[J.4] **Quang-Duy Nguyen**, Yining Huang, François Keith, Christophe Leroy, Minh-Thuyen Thi, and Saadia Dhouib, *"Manufacturing 4.0 : Checking the Feasibility of a Work Cell Using Asset Administration Shell and Physics-Based Three-Dimensional Digital Twins"*, MDPI Machines, 01/2024

[J.3] Fadwa Rekik, Saadia Dhouib, and **Quang-Duy Nguyen**, *"Bridging the Gap between SysML and OPC UA Information Models for Industry 4.0"*, Journal of Object Technology, 07/2023

[C.9] **Quang-Duy Nguyen**, Saadia Dhouib, Yining Huang, and Patrick Bellot, *"An Approach to Bridge ROS 1 and ROS 2 Devices into an OPC UA-based Testbed for Industry 4.0"*, Proceedings of the 1st IEEE Industrial Electronics Society Annual (ONCON), Virtual, 12/2022

[W.2] **Quang-Duy Nguyen**, Saadia Dhouib, and Patrick Bellot, *"A Unified Method to Design Bridges for OPC UA PubSub Networks in the Industrial IoT"*, Proceedings of the 27th IEEE International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD), Paris, France, 11/2022

[C.8] **Quang-Duy Nguyen**, Saadia Dhouib, Kunal Suri, and Fadwa Tmar, *"From Requirement Specification to OPC UA Information Model Design : A Product Assembly Line Monitoring Case Study"*, Proceedings of the 20th IEEE International Conference on Industrial Informatics (INDIN), Perth, Australia, 07/2022

[C.7] **Quang-Duy Nguyen**, Patrick Bellot, and Pierre-Yves Petton, *"An OPC UA PubSub Implementation Approach for Memory-Constrained Sensor Devices"*, Proceedings of the 31st IEEE International Symposium on Industrial Electronics (ISIE), Anchorage, United States, 06/2022

[C.6] **Quang-Duy Nguyen**, Fadwa Tmar, Yining Huang, and Saadia Dhouib, *"Early Lessons Learned from the Development of a Local OPC UA-based Robotic Testbed for Research"*, Proceedings of the 31st IEEE International Symposium on Industrial Electronics (ISIE), Anchorage, United States, 06/2022

[C.5] **Quang-Duy Nguyen**, Saadia Dhouib, Jean-Pierre Chanet, and Patrick Bellot, *"Towards a Web-of-Things Approach for OPC UA Field Device Discovery in the Industrial IoT"*, Proceedings of the 18th IEEE International Conference on Factory Communication Systems (WFCS), Pavia, Italy, 04/2022

[C.4] **Quang-Duy Nguyen**, Catherine Roussey, Patrick Bellot, and Jean-Pierre Chanet, *"Stack of Services for Context-Aware Systems : An Internet-Of-Things System Design Approach"*, Proceedings of the 15th IEEE International Conference on Computing and Communication Technologies (RIVF), Hanoi, Vietnam, 08/2021

[T.1] **Quang-Duy Nguyen**, *"Interoperability and Upgradability Improvement for Context-Aware Systems in Agriculture 4.0"*, PhD thesis, University Clermont-Auvergne, France, 2020

[J.2] Julian Eduardo Plazas, Sandro Bimonte, Christophe de Vault, Michel Schneider, **Quang-Duy Nguyen**, Jean-Pierre Chanet, Hongling Shi, Kun Mean Hou, and Juan Carlos Corrales, *"A Conceptual Data Model and its Automatic Implementation for IoT-Based BI Applications : UML Profile and MDA Approach"*, IEEE Internet of Things Journal, 10/2020

Summary

First-authored items : 14/18

Citations : 82

H-index : 5

I-index : 5

Items by domains :

IoT (7), OPC UA (7),
Ontology (5), AAS (3)

Items ranked by SJR :

Q1 (1), Q2 (2),
Q3 (0), Q4 (1)

Scopus-indexed Items : 17

WoS-indexed Items : 13

[C.3] **Quang-Duy Nguyen**, Catherine Roussey, Maria Poveda-Villalón, Christophe de Vault, Jean-Pierre Chanet, and Camille Noûs, "*CASO et IRRIG deux ontologies pour le développement de systèmes contextuels : cas d'usage sur l'automatisation de l'irrigation*", Actes des 31es journées francophones d'Ingénierie des Connaissances (IC), Angers, France, 07/2020

[J.1] **Quang-Duy Nguyen**, Catherine Roussey, Maria Poveda-Villalón, Christophe de Vault, and Jean-Pierre Chanet, "*Development Experience of a Context-Aware System for Smart Irrigation using CASO and IRRIG ontologies*", Special Issue "Semantic Technologies Applied to Agriculture", MDPI Applied Sciences, 03/2020

[W.1] Maria Poveda-Villalón, **Quang-Duy Nguyen**, Catherine Roussey, Christophe de Vault, and Jean-Pierre Chanet, "*Ontological Requirement Specification for Smart Irrigation Systems : A SOSA/SSN and SAREF Comparison*", Proceedings of the 9th International Semantic Sensor Networks Workshop (SSN) of the 17th International Semantic Web Conference (ISWC), Monterey, United States, 10/2018

[C.2] Maria Poveda-Villalón, **Quang-Duy Nguyen**, Catherine Roussey, Christophe de Vault, and Jean-Pierre Chanet, "*Besoins ontologiques d'un système d'irrigation intelligent : Comparaison entre SSN et SAREF*", Actes des 29es journées francophones d'Ingénierie des Connaissances (IC), Nancy, France, 07/2018

[C.1] **Quang-Duy Nguyen**, Julien Montavont, Nicolas Montavont, and Thomas Noël, "*RPL Border Router Redundancy in the Internet of Things*", Proceedings of the 15th International Conference on Ad-Hoc Networks and Wireless (ADHOC-NOW), Lille, France, 07/2016

Research Skills

Project Management	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
System Implementation	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Scientific Writing	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Presentation	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Linguistic

French	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
English	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Vietnamese	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Technical Skills

Standard	OPC UA, AAS, RAMI 4.0, ISA-95
IT Network	TCP/IP, UA PubSub, MQTT, REST
OT Network	Profinet, EtherNET/IP, MODBUS, UA-FX
OS/Middleware	Linux, Zephyr, BaSyx, ROS2
Methodology	Mini-Waterfall, LOT, Agile, MDE
Vocabulary	SOSA/SSN, CASO, IRRIG
Tool	Papyrus, Protégé, Wireshark, UaExpert

Programming

C	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Java	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
C++	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Python	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Shell script	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Node-Red/JS	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Query language	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

References

- **Dr. Saadia DHOUIB**, Senior researcher and project manager in LSEA, DILS department, CEA List
Direct supervisor in DRT/LIST/DILS/LSEA
✉ saadia.dhouib@cea.fr
- **Prof. Patrick BELLOT**, Director of the CCN team of LTCI, INFRES department, Télécom Paris
Direct supervisor in the project "OPC UA PubSub for Caméléon"
✉ patrick.bellot@telecom-paris.fr
- **Dr. Jean-Pierre CHANET**, Director of UR TSCF, MathNUM department, INRAE
Director of the thesis "Interoperability and Upgradability Improvement for Context-Aware Systems in Agriculture 4.0"
✉ jean-pierre.chanet@inrae.fr